REMARKS

Re-Opening of Prosecution:

Applicant thanks the Examiner for indicating that the arguments set forth in the Appeal Brief were persuasive, and for withdrawing the previously asserted rejection of the claims.

Election/Restriction:

Claims 33 and 39 remain withdrawn from consideration.

Claim Rejections:

Claims 1-32, 34-38 and 40 are all of the claims that have been examined, and currently all of these claims stand rejected.

35 U.S.C. § 102(b) Rejection - Claims 1-2, 14, 29-31 and 34:

Claims 1-2, 14, 29-31 and 34 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,688,053 to Itoh et al. In view of the following discussion, Applicant respectfully traverses the above rejection.

Itoh discloses a dynamic pressure bearing 101 having a radial bearing 105, which is positioned through a center hole of a rotor 107. Above the rotor 107 is an upper thrust bearing 109, and below the rotor is a lower thrust bearing 103. The upper and lower thrust bearings are positioned such that they provide an air gap between the respective guide faces 10A, 10B and 10C, which are "smooth" surfaces. *See* col. 3, line 62 to col. 6, line 2; and Figure 4. The air gaps are in the range of 1 to 7 μm. Col. 5, lines 1-9.

Itoh also discloses that the materials of the above-mentioned lower thrust bearing 103, the above-mentioned upper thrust bearing 109, radial bearing 105, member for retaining rotor 107

and rotor 107 constituting dynamic pressure bearing 101 in the first and second Examples explained as above may either be metal, or ceramic. Col. 6, lines 35-41.

Further, as shown in Figure 6, Itoh discloses that a recess 121 is formed on at least the lower thrust plate 103 to provide a favorable dynamic pressure effect. The depth of this recess is in the range of 3 to 10 μm. Col. 6, lines 52-60.

Itoh also discloses that the surface smoothness of the surfaces of the rotor 107 and the thrust plates is "Ra 0.3 or less" and preferably an Ra of 0.2 or less. Col. 7, lines 54-64; and Table 1.

However, contrary to the Examiner's assertions, Itoh fails to disclose or suggest the features of the present invention.

With regard to elements (i), (ii), and (iii), Itoh fails to disclose the claimed "flatness." Particularly, "flatness," as defined by the Standard JIS B0021 (1984)[1], is a distance between two virtual parallel planes, between which the face to be measured is positioned. That is, when determining the flatness of a surface, two parallel lines are located at the peaks of the surface roughness, such that the total surface, including the highest and lowest peaks of the wave (or surface) are located within the two parallel lines.

Claim limitations (i), (ii), and (iii) require the respective gap definition surfaces (as set forth in the claims) to be located within a gap which is not greater in height than 3 μm. The gap is defined by two virtual planes which are parallel to each other, such that the respective claimed gap definition surfaces are within the above defined gap.

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[1] Specification, Page 5, Para. 16. Additionally a courtesy copy of an English translation of JIS B 0021 is attached for the Examiner's reference.

Stated differently, the claimed "flatness" requires that the respective gap definition surfaces be completely between two parallel virtual planes that are 3 μm apart. This limitation is not disclosed in Itoh.

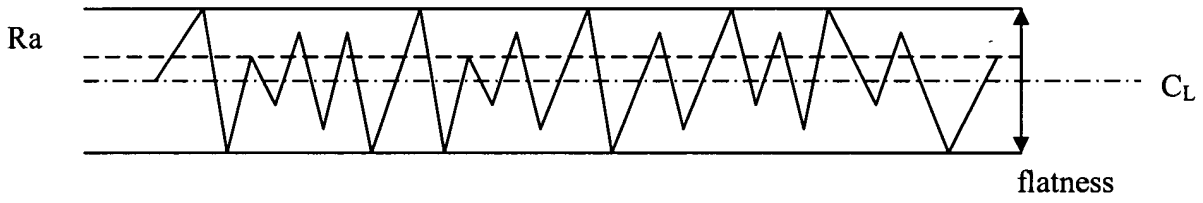
Specifically, Itoh (particularly Figure 6) discloses nothing more than surfaces having an Ra of 0.3 or less, and preferably an Ra of 0.2 or less. Regardless of the assertions made by the Examiner, this disclosure fails to teach any of the claimed elements (i), (ii) or (iii). This is because of the distinct differences between the "Ra" of a surface and the "flatness" of a surface. These distinctions will be discussed below.

First, in this field of art, "Ra" can be easily characterized as an average distance from a virtual centerline of the surface. More particularly, in the calculation of Ra, the roughness curve is a curve which has been cutoff of any surface waviness component than a prescribed wavelength from the profile curve by means of a phase compensation type high-pass filter.[2] This can be seen in Figure 2, of the JIS B 0601 standard (attached) where the determination of Ra ignores the maximum and minimum peaks of the surface. Stated differently, Itoh simply discusses and discloses the roughness of short surface profile waves on a cut end of the surface, but does not take into account the long and short waves of the surface profile over the entire surface.

Thus, it is well known and understood that "Ra" is much less than the "flatness" of a particular surface, where the "flatness" is the maximum distance between two parallel lines which are parallel to the centerline of the surface, such that in determining the "flatness" the

[2] See Standard JIS B0601 (1994). A courtesy copy of an English translation of this standard is enclosed for the Examiner's convenience.

longer waves (neglected by Ra) are just what is to be measured when determining flatness. Stated differently, the average smoothness of a surface (i.e., Ra) will be much less than the maximum height of the surface. This is because when determining the "Ra" of the profile curve of the surface, the maximum peaks of the profile curve are ignored, and are not used in the determination. Thus, it is well understood that the "Ra" of a surface will be considerably less than the "flatness" of a surface. Because of this, just because the "Ra" of a surface is known, there is no way to determine the "flatness" of a surface. This is shown in the simplified diagram below.



Thus, even though Itoh may disclose an Ra of 0.3 or less, this disclosure has little or no relevance to the overall flatness as the highest peaks of the curve or ignored in the determination of Ra. Thus, even though a surface can have an Ra of 0.3 or less, the overall flatness can be much larger. Therefore, Itoh fails to disclose the claim elements (i), (ii), or (iii), because there is no disclosure regarding any limitation of flatness in Itoh.

In fact, Applicant notes that "Ra" is known to be less than the measurement "Ry" which corresponds to the short waviness component of the claimed "flatness." Specifically, "Ry" is the maximum distance between two parallel lines to the centerline of the surface, which is different than "flatness". Thus, "Ry" can be characterized as a short waviness component of "flatness."

As discussed above, "flatness" is the distance between two parallel virtual planes such that all of the long and short profile waves over the entire surface are between the two virtual planes, and the claim requires that these planes be 3 μm apart, or less, such that the gap definition surface is positioned between the parallel planes (i.e., the entire surface).

Therefore, just because Itoh discloses Ra, does not mean that Itoh discloses what is the maximum acceptable flatness of the surface (i.e. the maximum of long and short profile waves over the entire surface), and thus there is no disclosure regarding this claimed feature.

In fact, even if Itoh were to disclose an Ra of 0 (i.e. "0.3 or less"), this provides no disclosure regarding the value of flatness. One can not determine the "flatness" of a surface by knowing only the "Ra", or even "Ry" of a surface.

As such, Applicant submits that neither of the elements (i), (ii), or (iii) (in claim 1) are disclosed in Itoh.

With regard to elements (iv) and (v) Itoh also fails to disclose either of these aspects of the claimed invention, as acknowledged in the Office Action.

With regard to the element (vi), contrary to the Examiner's assertions, there is no disclosure in Itoh, of this claimed feature. Specifically, there is no specific disclosure regarding the clearance between outermost circumferential portions of a second member and a thrust plate, as set forth in the claims.

In view of the foregoing, Applicant submits that Itoh fails to disclose each and every feature of the claimed invention, as set forth in the above claims. Therefore, Applicant submits that Itoh fails to anticipate the claimed invention, as required under the provisions of 35 U.S.C. §

102(b). Accordingly, Applicant hereby requests the Examiner reconsider and withdraw the above 35 U.S.C. § 102(b) rejection of the claims.

35 U.S.C. § 103(a) Rejection - Claims 3-13:

Claims 3-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh in view of NIST Property Data Summaries. However, because these claims depend on claim 1, and because the NIST data summaries fail to address any of the deficiencies of the Itoh reference, Applicant submits that these claims are also allowable, at least by reason of their dependence.

Moreover, NIST simply discloses a ceramic material, and says nothing about the relation between harness of the surface of the thrust plate and that of the surface of the second member.

35 U.S.C. § 103(a) Rejection - Claims 15, 16, 28, 32, 35-38 and 40:[3]

Claims 15, 16, 28, 32, 35-38 and 40 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh, in view of the previously applied Jabbar reference. In view of the following discussion, Applicant respectfully traverses the above reference.

As an initial matter, Applicant submits that these claims are allowable for the same or similar reasons as those set forth above regarding the Itoh reference, and claim 1. Specifically, Applicant submits that Jabbar fails to cure the deficient teachings of Itoh, and as such, the above claims are also allowable.

Additionally and independently, contrary to the Examiner's assertion, Jabbar's disclosure is insufficient to establish the claimed "crowned" aspect of the present invention. The mere fact

[3] Although the Examiner included claim 39 in this rejection, as set forth in the Office Action, Applicant believes this to be a typographical error as claim 39 has been withdrawn, and will proceed under this presumption.

that Jabbar discloses an angled surface (Figures 6C and 6D) is insufficient to describe the specific limitations set forth in the claims. Namely, under the Examiner's reasoning, Jabbar could equally disclose an inner circumferential portion of the sleeve 42 projecting by an amount greater than 5 μm with respect to an outermost circumferential portion of the sleeve 42. Thus, the Examiner's assertion of obviousness is improper, because the claimed limitations are not present in Jabbar.

Further, Jabbar only discloses that "laterally extending axial surface 103 of base 43 and laterally extending axial surface 105 of the base 44 each make an angle of approximately 60 to 80 degrees with respect to the vertical axis of motor shaft." Jabbar, col. 7, lines 7-10. However, without more, such as physical dimensions of the surfaces, this information is insufficient to teach or suggest each and every feature of the claimed invention. As such, the above cited combination fails to render the claimed invention obvious.

Moreover, with regard to claims 32 and 38, the rejection lacks merit, as although Jabbar appears to disclose a crowned shape, there is no disclosure, whatever, regarding the claimed dimensions.

In view of the foregoing, Applicant submits that (1) it would not have been obvious to combine Itoh and Jabbar, as suggested by the Examiner, and (2) even if the references were combined the resultant combination would fail to teach or suggest each and every feature of the claimed invention. Therefore, the Examiner has failed to establish a *prima facie* case of obviousness, as required under 35 U.S.C. § 103(a). Accordingly, Applicant hereby requests the Examiner reconsider and withdraw the above 35 U.S.C. § 103(a) rejection of the above claims.

35 U.S.C. § 103(a) Rejection - Claims 17-27:

Claims 17-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh in view of Jabbar, in further view of NIST Property Data Summaries. However, because these claims depend on claim 15, and because the NIST data summaries fail to address any of the deficiencies of the Itoh or Jabbar references, Applicant submits that these claims are also allowable, at least by reason of their dependence.

New Claims:

Applicant has added new claims 41 and 42, as shown in the previous section to further claim the present invention. Further, Applicant submits that these newly added claims are also allowable for the same reasons as those set forth above.

Conclusion:

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Terrance J. Wikberg
Registration No. 47,177

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